AMENDMENT 1
TBN #21519

February 5, 2004

REQUEST FOR INITIAL PROPOSAL (RFIP)
FOR
AWARD OF A COOPERATIVE AGREEMENT

The following solicitation, Section B.2. and B.4., have been amended effective 02-05-04.

1. In Section B.2., the statutory authority has been changed from SDWA (a)(11) to SDWA (a)(1).

2. In Section B.4., the cost share requirement of 5% has been administratively moved from Section B.2., and incorporated into Section B.4.

All other information, terms and conditions remain unchanged. The due date for proposals remain unchanged.

A. OVERVIEW INFORMATION

1. Federal Agency Name: US Environmental Protection Agency (EPA), National Risk Management Research Laboratory (NRMRL), Waters Supply Water Resources Division (WSWRD)

2. Title of Assistance Opportunity: "Pulsed UV versus Low to Medium Pressure UV: Evaluation of Drinking Water Treatment Efficiency"

3. Announcement Type: Initial Announcement

4. Funding Opportunity Number: TBN # 21519

5. CFDA Number: 66.511 Consolidated Research

6. Posted Date: November 17, 2003

7. Due Date for Initial Proposals: February 10, 2004

8. Due Date for Full Application: Only the applicant selected for award will be required to submit the full application. See tentative schedule in Section B.11.

B. OTHER INFORMATION

1. E.O. 12372: Executive Order 12372 is applicable to this RFIP. Information on E.O.12372 can be found at: http://www.cfda/gov/public/browse-by-12372.asp. State information can be found at: http://www.epa.gov/seahome/grants/src/statemap.htm.

2. Statutory Authority for Award of Assistance:

Safe Drinking Water Act, 1442 (a)(1). No profit makers. - *This project will provide research for the public good to investigate the merits of PUV compared to low and medium UV to determine if PUV is a better treatment technology for drinking water disinfection.*

3. Eligible Applicants: See Section III

4. Cost Share Requirement: 5% Cost Sharing

5. Applicable Regulations:

Grants and agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations are subject to 40 CFR Parts 30 and 40 and OMB Circular A-122 for non-profits and A-21 for institutions of higher education.

Grants and Agreements with State, local and Indian tribal governments are subject to 40 CFR Parts 31 and 40 and OMB Circular A-87.

6. Anticipated Federal Involvement: This cooperative agreement will involve substantial Federal involvement. The EPA anticipated potential collaboration under this cooperative agreement will include the following, by:

- Providing oversight on the project,
- Providing assistance in the analysis and interpretation of the research,
- Providing assistance in implementing any changes in the research,
- Coordinating the exchange of related technical and research information between EPA and the recipient**,** and
- Providing EPA technical expertise to assist in resolving technical issues regarding the project.
- Providing oversight in the development of the QAPP for the research

7. Dunn and Bradstreet Identification Number: is applicable to this RFIP. The central contractor register can be found at: http://www.ccr.gov

8. Amendments: Amendments will be posted on this website at: http://www.epa.gov/ord/NRMRL/fundopps/index.htm. The due date for initial proposals will be extended if deemed appropriate.

9. Funding Priorities/Focus: This research will support Goal 2, Clean/Safe Water, Sub-objective 20107, Safe Drinking Water Research; Drinking Water Treatment, Homeland Security.

10. Additional Estimated Award Information:

Number of Awards: One
Type of Award: Cooperative Agreement
Amount and Range of Individual Awards: $200,000
Funding: $200,000 for 2 years (No incremental)
Project Period: Date of award through 2 years (projected to end in 2006)

11. Tentative Schedule: To initiate the research in FY04, EPA intends to use the following schedule:

Date	Task
2/10/04	EPA receives RFIPs
2/17/04	EPA completes administrative and relevancy reviews and submits compliant applications for peer review
3/17/04	EPA receives and reviews peer reviews; selects an application(s) for negotiations; requests full application.
4/01/04	Negotiations completed. EPA submits funding package with award recommendation to GAD
6/01/04	Recipient receives signed award documentation from GAD
6/21/04	Recipient accepts by sending signed cooperative agreement to GAD.
7/1/04	Project begins.

FULL TEXT OF ANNOUNCEMENT

I. FUNDING OPPORTUNITY DESCRIPTION

Background

There continues to exist today a need for additional disinfection methods for drinking water and wastewater. The majority of drinking water systems in the U.S. use chlorine gas as the primary and secondary disinfectant. Chlorine disinfection can lead to the formation of disinfection by-products (DBPs) some of which are regulated under National Primary Drinking Water Regulations (e.g. haloacetic acids). Proposed regulations would lower the maximum contaminant levels for some DBPs (USEPA 2003b). The use of UV light as an additional treatment method could help to minimize the formation of DBPs and more effectively combat organisms (e.g. *Cryptosporidium* oocysts) resistant to chlorination.

UV light has been used for disinfection purposes for many years, but early on, its use was limited to wastewater primarily. Wastewater disinfection with UV began in the late 1970s (EPRI CEC, 2000). Currently, low pressure (LP) UV lamps are used for the most part in the U.S. for wastewater disinfection. Lately, more attention has been directed to the use of UV disinfection for other purposes, including the treatment of drinking water. Treatment of drinking water with chlorine has been shown to produce DBPs, which are potentially hazardous to health. Ultraviolet light does not produce DBPs when employed at fluence (UV dosage) levels typically employed for water treatment (e.g. 300 mJ/cm^2 for viruses, 50 mJ/cm^2 for protozoans/bacteria) (Liu et al. 2002). Other researchers have examined the effects of UV on atrazine and nitrate (Lemoine et al. 2002)and phosphate and organic carbon (Lehtola et al. 2003). Generally, the UV dosage required to affect these inorganic and organic compounds is much higher (>500 mJ/cm^2) than that typically employed in water treatment plants. The proposed Long Term 2 Enhanced Surface Water Treatment Rule (LT2) lists UV as one possible item in a potential "microbial toolkit" that can be employed by treatment systems for inactivating microbial contaminants. Essentially, treatment systems can earn log inactivation credits for microbial contaminants based on the reduction equivalent dose (RED) delivered by a particular UV reactor (USEPA 2003a). The USEPA has also produced a draft document for review that thoroughly describes the validation procedure required for different UV reactors to ensure their effectiveness (USEPA 2003c).

One drawback of continuous wave UV lamps is the need for a warm-up time prior to maximum effectiveness (on the order of 0.5 to 1 hour). Pulsed UV (PUV) technologies are "instant-on" which is a highly desirable attribute especially in emergency situations. Pulsed UV lamps also use xenon (as opposed to mercury for most continuous wave low pressure lamps) in the light source (Marshall 1999). This is desirable as Hg contamination due to broken lamps can be a serious problem. Pulsed UV lamps emit light in microsecond bursts over a wide range of wavelengths, which includes the germicidal wavelength, at very high fluxes (10^6-10^7 mW/cm^2 vs 20 to 30 mW/cm^2 for continuous wave lamps). Pulsed UV systems accomplish this by converting ac current to dc current. The electrical energy is then stored in a capacitor and released through a high speed switch to generate intense UV light (Fleming 2002). The PUV lamp can produce radiation approximately 20,000 times as intense as that of sunlight at sea level (EPRI CEC, 2000). Though PUV treatment offers advantages over continuous wave UV treatment, the cost is currently greater for PUV systems than for continuous wave UV. There exists a need for comparisons of PUV and continuous wave UV in order to better determine the scenarios where one technology might be better than the other.

Purpose

The Water Supply and Water Resources Division (WSWRD) of the National Risk Management Research Laboratory (NRMRL) is interested in pursuing further investigations into treatment efficiency differences using pulsed UV versus low to medium pressure continuous wave UV in the removal of pathogenic organisms from drinking water sources. The WSWRD wishes to promote the public welfare by stimulating interest in determining if pulsed UV is suitable as an additional treatment technology that has the added features of:

1) "instant-on"

2) minimizing risks from mercury
3) minimizing disinfection by-product formation
4) providing additional disinfection capabilities for chlorine resistant contaminants.

Overall, the greatest benefit of the research on PUV, if the data resulting from the research can provide an assurance that PUV is better than LP UV and/or MP UV as an additional drinking water treatment option, would be protecting public health. This would impact public utilities responsible for treating drinking water by providing them an additional technology for enhancing their current treatment. Manufacturers who design new systems might be encouraged to refine this technology for the benefit of the public good by producing more cost effective PUV lamps and systems, based on the data generated from this research. PUV could be used for the public welfare as a quick response to water quality threats associated with terrorist attacks using biological or chemical weapons. Another use for PUV might be in Point of Use/Point of Entry water treatment to protect public health against accidental contamination as well as intentional. This technology could become significant in the areas of water treatment and security.

Results from studies on drinking water treatment could then be applied to wastewater treatment for future consideration. Wastewater (WW) has low transmittance and it is not certain whether pulsed UV can penetrate better than low or medium pressure UV. Pulsed UV treatment of WW could reduce the amount of chlorine needed in conventional treatment methods, thereby reducing the costs associated with chlorine removal prior to discharge. This work could also lay the foundation for PUV WW treatment and reuse.

Project Objectives

The proposal in response to this RFIP should provide a detailed scope of work and all work should assess effects on *Cryptosporidium parvum* (or appropriate surrogate organism) and other microbial pathogens that will address the following:

(1) Is high intensity pulsed UV a better alternate disinfectant in terms of disinfection capability than low to medium pressure UV, is there no difference, or is the difference so slight that higher operating costs would make it impractical?
(2) What is the effect of pulsed UV in terms of inactivation of microbial pathogens and reactivation in drinking water compared to low and medium pressure UV?
(3) What are the differences in REDs (PUV vs. LP and MP continuous wave UV) for equal log inactivations of microbial contaminants given set flow rate, UV transmittance of water sample, and UV dosage? How do the REDs differ with changing experimental parameters?

The scope of work should include the following elements:

- A description of the UV treatment processes and how the research will be conducted in order to meet the objectives
- How the results of the treatments will be validated
- A tabular comparison of the results of the three treatments in the final report
- Cost analysis methodology that compares costs of each treatment

References

EPRI Community Environmental Center, 2000. Comparison of UV Technologies for Poughkeepsie, NY and Arlington POTW, conducted by Black & Veatch, Inc. for the Electric Power Research Institute CEC, Washington University, St. Louis, May 1, 2000.

Fleming, H. 2002. Out of the dark. Environ Protection **13**:46-53.

Lehtola, M. J., I. T. Miettinen, T. Vartiainen, P. Rantakokko, A. Hirvonen, and P. J. Martikainen. 2003. Impact of UV disinfection on microbially available phosphorous, organic carbon, and microbial growth in drinking water. Wat Res **37**:1064-1070.

Lemoine, C., D. Gatel, and J. Cavard. 2002. Optimum location of an ultraviolet step in a surface water treatment plant. Wat Sci Technol: Wat Supply **2**:381-386.

Liu, W., S. A. Andrews, J. R. Bolton, K. G. Linden, C. Sharpless, and M. Stefan. 2002. Comparison of disinfection byproduct (DBP) formation from different UV technologies at bench scale. Wat Sci Technol: Wat Supply **2**:515-521.

Marshall, T. 1999. Deadly Pulses. Water Environ Technol **11**:37-41.

USEPA. 2003a. Federal Register 40 CFR Parts 141 and 142. National Primary Drinking Water Regulations: Long Term 2 Enhanced Surface Water Treatment Rule; Proposed Rule. USEPA, Washington, DC.(Available on line at: **http://www.epa.gov/safewater/lt2/index.htm**)

USEPA. 2003b. Federal Register 40 CFR Parts 141, 142, and 143. National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule; National Primary and Secondary Drinking Water Regulations: Approval of Analytical Methods for Chemical Contaminants; Proposed Rule. USEPA, Washington, DC (Available on line at: **http://www.epa.gov/safewater/stage2/index.htm**)

USEPA. 2003c. Ultraviolet Disinfection Guidance Manual. EPA/815/D/03/007, USEPA Office of Water, Washington DC. (Available on line at: **http://www.epa.gov/safewater/lt2/index.htm**)

II. AWARD INFORMATION

A. Each proposal to pass the administrative and relevancy review will be submitted for peer review (See Section V. for a description of the reviews). Proposals will be evaluated against the factors below.

Evaluation Factors

1. **Overall Scientific Merit of Technical Approach (60 points)**
   a) Technical approach in meeting the project objectives (30 points)
   b) The plan for meeting the objectives and the project management organization (20 points)
   c) The Quality Management Program (10 points)

2. **Qualifications and Commitment of Key Personnel (25 points)**
   a) The project team experience in managing and conducting research activities relative to the proposed research (15 points)
   b) Project team availability and time commitment of key personnel (5 points)

c) Appropriate personnel mix (5 points)

3. Institutional Capability (e.g., availability of equipment and facilities) (15 points)

III. ELIGIBILITY INFORMATION

A. Eligible Applicants: Non-profit organizations, states, universities, tribes, and local governments. No profit makers are eligible

B. Cost Sharing Requirements: 5%

IV. APPLICATION AND SUBMISSION INFORMATION

A. This announcement contains all the information needed to apply for this assistance opportunity. The applicant should submit an initial proposal consisting of the information noted in Section IV.B below. Only the applicant selected for award will be required to submit the full application package set forth in Section VIII.

B. Content and Format of Application: At a minimum, the initial proposal should cover no more than 15 pages and consist of the following:

1. Cover Sheet: This identifies the RFIP title and identification number, name and address of the applicant, point of contact and telephone number for the applicant, and the date submitted. This page is not considered part of the 15 page requirement.

2. Project Description: This description must not exceed fifteen (15) consecutively numbered (center bottom), 8.5x11-inch pages of single-spaced standard 12-point type with 1-inch margins. The description must provide the following information:

- **Objectives:** List the objectives of the proposed research, the hypotheses being tested during the project, and state briefly why the intended research is important. This section should include any background or introductory information that would help clarify the objectives of the study.

- **Approach:** Outline the methods, approaches, and techniques you intend to employ in meeting the objectives of the study. (5 to 10 pages recommended)

- **Expected Results or Benefits:** Describe the results you expect to achieve (in plain
language) during the project, how will you measure this achievement of success as they relate to the topic under which the proposal was submitted, anticipated environmental outcomes and results, and the potential recipients of these benefits.

Discuss the utility of the research proposed for addressing the objectives described in the solicitation. (1 to 2 pages recommended)

- **General Project Information:** Discuss other information relevant to the potential success of the project. This should include facilities, personnel, project schedules, proposed management, interactions with other institutions, etc. (1 to 2 pages recommended) If the organization providing a proposal has a Quality Management Plan (QMP) established, please state so and attach a copy with the additional items. A Quality Assurance Project Plan (QAPP) would still be a requirement within 60 days of the award, if the proposal was accepted.

- **Important Attachments:** Appendices and/or other information may be included but must remain within the 15-page limit. References cited are in addition to the 15 pages.

3. In addition to the 15-page Project Description, the following items should be added:

1) Resumes: The resumes of all principal investigators and important co-workers should be presented. Resumes must not exceed two consecutively numbered (bottom center), 8.5x11-inch pages of single-spaced standard 12-point type with 1-inch margins for each individual.

2) Budget Estimate: Provide a brief budget estimate for the project that is broken down into direct labor, fringe benefits, equipment, travel, other direct costs and overhead with summaries for each year and the total for the entire project. Indicate any proposed cost sharing. If a subcontract will be included in the application, provide a separate budget in the same format. Page formatting shall be the same as in a).

3) Current and Pending Support: The applicant must identify any current and pending financial resources that are intended to support related proposal research or which would consume the time of principal investigators. A detailed description of how much time could reasonably be allotted to the proposed research with regard to the principal investigators and
other key personnel should be added to the General Project Information in Section

4) Quality Assurance Statement (QAS): For any project involving data collection or processing, conducting surveys, environmental measurements, and/or modeling, or the development of environmental technology (whether hardware-based or via new techniques)for pollution control or wastewater treatment, provide a statement on quality processes intended to be used to assure the results of the research satisfy the intended project objectives. For awards that involve environmentally related measurements or data generation, a quality system that complies with the requirements of ANSI/ASQC E4, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," must

be in place. The QAS should not exceed two consecutively numbered pages formatted as in (a). This Statement should present the required information, referencethe relevant portion of the project description containing the information, or provide a justification as to why the item does not apply to the proposed research, as follows:

a. Discuss the activities to be performed or hypothesis to be tested and criteria for determining acceptable data quality. Criteria maybe expressed in terms of precision, accuracy, representativeness, completeness, and comparability. These criteria must also be applied to determine the acceptability of existing or secondary data to be used in the project.

b. Describe the study design, including sample type and location requirements, any statistical analyses used to estimate the types and numbers of samples required for physical samples, or equivalent information for studies using survey and interview techniques. (If applicable)

c. Describe the procedures for the handling and custody of samples, including sample collection, identification, preservation, transportation, and storage.

d. Describe the procedures to be used in the calibration and performance evaluation of the sampling and analytical methods and equipment to be used during the project.

e. Discuss the procedures for data reduction and reporting, including a description of statistical analyses to be used and of any computer models to be designed or utilized with associated verification and validation techniques.

f.. Describe the quantitative and qualitative procedures that will be used to evaluate the success of the project, including any plans for peer or other reviews of the study design or analytical methods prior to data collection.

There are EPA requirements documents (R-series) and guidance documents (G-series) available for potential applicants which address in detail how to comply with ANSI/ASQC E4. These may be found on the Internet at http://www.epa.gov/quality/qa_docs.html. Two EPA documents, R-5, "EPA Requirements for Quality Assurance Project Plans," and G-4, "Guidance for the Data Quality Objectives Process," are particularly pertinent to this RFA's QA. QA/R-2 defines the requirements for Quality Management Plans (QMP). **A Quality Assurance Project Plan will be required within 60 days of the award, prior to sample collection and data generation.**

5) Proprietary Information: By submitting an application (proposal) in response to this RFIP, the applicant grants EPA permission to share the application with technical peer reviewers both inside and outside the government. RFIPs for research and demonstration projects will be provided

to at least one internal EPA peer reviewer and two non-EPA peer reviewers. All reviewers will be required to sign confidentiality agreements certifying that they will keep all deliberations confidential, that they will not copy any portions of any material provided by EPA for review, and that they will return all material to EPA upon request. Applicants shall clearly mark information considered confidential. EPA will make final confidentiality decisions in accordance with Agency regulations in 40 CFR, Part 2, Subpart B. **Applications shall include an explicit statement that the applicant understands the EPA's review process and agrees to allow EPA to provide the confidential material to all selected internal/external EPA reviewers.**

C. OTHER SUBMISSION REQUIREMENTS

1. The original and four copies of the initial proposal should be submitted to:

By mail, to: CYNTHIA JOHNSON, EMS
U.S. ENVIRONMENTAL PROTECTION AGENCY
ORD/NRMRL MS 209B
26 W. MARTIN LUTHER KING DRIVE
CINCINNATI OH 45268

In person: Same address as mail address, Room 207.

2. One copy should be submitted to:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF GRANTS AND DEBARMENT
1200 PENNSYLVANIA AVENUE, NW (3903R)
ROOM 51288
WASHINGTON, D.C. 20460

EPA reserves the right to make additional copies of initial proposals in sufficient quantity for distribution to the reviewers.

3. Submission date and time: To be considered timely, **initial proposals** must be postmarked by U.S. Postal Service or hand-delivered to the EPA Extramural Specialist or include official delivery service documentation indicating EPA acceptance from a delivery service, on or before 4:00 p.m. local time on the due date established **(February 10, 2004).**

V. APPLICATION REVIEW INFORMATION

A. Criteria - See Section II, "Evaluation Factors,"

B. Review and Selection Process

1. Administrative Review: All initial proposals will be subjected to an administrative review by EPA to ensure they conform with the requirements of this RFIP. EPA may reject any applications that fail to conform to the requirements of the RFIP. Some examples of common reasons for rejection are:

a. Having more than 15 pages,
b. Not addressing each evaluation criterion,
c. Not proposing a cost share**,**
d. Being from a non-qualified source *(e.g., profit-making organizations, or organizations on the GSA Debarred and Suspended Bidders List),* etc.

2. Relevancy Review: Initial proposals that are found administratively acceptable will be subjected to a review by EPA for relevancy to the objectives of the funding opportunity. Initial proposals may be rejected if they are found to lack relevancy. Examples include:

a. Proposal is deficient technically with no chance for consideration,
b. Proposal fails to advance the objectives stated in the solicitation even if successfully performed,
c. Proposal essentially duplicates research already completed or underway,
d. Proposal does not have a public purpose of support and stimulation**,** etc.

3. Technical (Peer) review: Initial proposals that are found administratively acceptable and relevant shall be reviewed for technical merit by at least one internal EPA reviewer and at least two non-EPA reviewers who are able to demonstrate both technical expertise and a lack of any conflict of interest. All relevant proposals will be peer reviewed. The proposals will be evaluated against the following criteria:

4. Evaluation Process: EPA will conduct the evaluation of initial proposals and make selection of the applicant for award. All administratively compliant and relevant proposals will be peer reviewed (technical review) and based on that review, the applicant selected for award will be requested to submit a full, detailed application in accordance with the guidance
provided by EPA'sOffice of Grants and Debarment
(http://www.epa.gov/ogd/AppKit/index..htm)

5. Rejection: Applications may be rejected because they fail to comply with the administrative requirements of the RFIP, they are found to lack relevancy, they are judged technically unacceptable, or they are not deemed suitable for award due to other factors (if identified). EPA will promptly notify those applicants whose initial proposal is rejected. EPA reserves the right to reject all proposals or applications and make no awards.

6. Disputes: Disputes shall be resolved pursuant to the process described in 40 CFR 30.63 and Part 31, subpart F .

C. Anticipated Announcement and Award Date: See tentative schedule in Overview, Section B.11

VI. AWARD ADMINISTRATION INFORMATION

A. Notifications:

Unsuccessful Applicants: Applications not selected for award will be notified within 10 days from GAD award date. The notification shall include the following:

Name of successful applicant
Address of successful applicant
Award amount
Period of performance

Successful Applicant: The notice of award signed by the grants officer (or equivalent) is the authorizing document.

B. Administrative Requirements

Reporting Requirements for Success Applicant

There will be reporting requirements for the awardee. Brief (approximately 5 pages) quarterly progress reports will be required by the Project Officer (PO) for the duration of the award. The quarterly progress reports will include progress (since commencement or last progress report), expenditures (total and for the quarter), problems and resolutions, and future steps. A final report will also be required by the PO. At least one peer-reviewed journal article publishing the results of the study will also be required.

VII AGENCY CONTACTS:

1. Contact for questions: Applicants who need assistance or have any technical questions should contact Cynthia Johnson, Extramural Specialist for this project.

- Telephone Number: 513-569-7873
- Fax Number: 513-569-7158
- E-mail Address: johnson.cynthia@epa.gov

Questions should be submitted in writing (if possible) at least 30 days prior to the due date for initial proposals. Do not attempt to seek information regarding this RFIP from any

other source as the information provided may be erroneous. Questions that are considered significant will be answered via an amendment to this RFIP.

2. Full Application Submission Address (Applies only to selected applicant):

a. **One original with signatures is sent to GAD at one of the following addresses:**

OFFICIAL MAILING ADDRESS:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF GRANTS AND DEBARMENT
1200 PENNSYLVANIA AVENUE, NW (3903R)
ROOM 51288
WASHINGTON, D.C. 20460

COURIER HAND DELIVERY ADDRESS:

U.S. ENVIRONMENTAL PROTECTION AGENCY
1300 PENNSYLVANIA AVENUE, NW (3903R)
FIFTH FLOOR, ROOM 51288
WASHINGTON, D.C. 20004

Full applications must be received by the selected applicant by the date and time specified in request for submission of full applications.

b. One original with signatures and one copy are sent to the Project Officer named below:

Lucille Garner
ORD/NRMRL/WSWRD/WQMB MS-690
26 W. Martin Luther King Drive
Cincinnati, OH 45268

VIII. FULL APPLICATION INSTRUCTIONS (APPLIES ONLY TO SELECTED APPLICANT)

After the administrative and relevancy review, proposals found to be compliant will be submitted for a technical review and a selection will be made by EPA when the reviews are complete. **The selected applicant will be notified by mail. Upon notification, the recipient submits the full application to EPA: One original (w/signatures) plus one copy are sent to the**

project officer and one original (w/signatures) is sent to GAD as specified in VII.2 . Addresses are located in VII.2. The complete application kit for federal assistance can be accessed at the following URL: http://www.epa.gov/ogd/AppKit/index.htm Select "Grant Application Forms. Included in the full application as submitted to the Project Officer and GAD are the following:

- SF-424 Application For Federal Assistance, with original signature, including:
  1) SF-424 A, Budget by categories and indirect cost rate
  2) SF-424 B, Assurances for non-construction programs
- Debarment and Suspension Certification
- SF-LLL, Disclosure of Lobbying Activities
- EPA Form 4700-4 Preaward Compliance Review Report
- Research Narrative Statement (Work Plan)
- Quality Assurance Narrative Statement
- Detailed Itemized Budget
- Copy of Negotiated Indirect Cost Rate Agreement
- Biographical Sketch to GAD
- One Self-Addressed Envelope (if you want to receive notification of receipt from GAD)

Additional Information to be Submitted if Applicable:

(1) If you are submitting your application under the Federal Demonstration Project, please indicate it in block 11.
(2) If your project requires an Environmental Impact Statement or Environmental Assessment, or both, please indicate it on a separate sheet of paper
(3) If your project involves human testing studies, please indicate it on a separate sheet of paper.
(4) If your project involves animal testing studies, please indicate it on a separate sheet of paper
(5) Provide your **Dunn and Bradstreet identification number.**